Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (Currently amended) A method for conveying bidirectional data over a transformer comprising the steps of:

modulating an alternating current signal with outbound data;

driving a first side of the transformer with the modulated signal;

receiving the modulated signal from a second side of the transformer;

extracting outbound data from the received modulated signal **using a comparator**;

modulating according to inbound data the load presented to the second side of the transformer when the alternating current signal is not modulated; and

receiving inbound data by sensing said load modulation.

2. (Original) The method of Claim 1 wherein modulating the alternating current signal with outbound data comprises switching the phase of an alternating current signal according to a serial bit stream coincident with a clock.

3. (Original) The method of Claim 1 wherein extracting outbound data comprises:

extracting a clock signal from the received modulated signal; and

sampling the received modulated signal according to the extracted clock signal.

4. (Original) The method of Claim 3 wherein extracting a clock signal comprises:

sensing transitions in the received modulated signal;

generating an independent clock signal; and

synchronizing the independent clock with the transitions.

5. (Original) The method of Claim 1 wherein modulating the load presented to the second side of the transformer comprises:

varying the impedance presented to the transformer according to a serial data stream coincident with an extracted clock signal.

6. (Original) The method of Claim 1 further comprising:

generating an analog signal according to the extracted outbound data signal; and

varying the impedance of a circuit load according to the analog signal.

7. (Original) The method of Claim 1 wherein modulating the load presented to the second side of the transformer comprises:

generating a digital value according to the voltage across a circuit load coincident with an extracted clock signal; and

varying the impedance presented to the second side of the transformer according to the digital value.

8. (Currently amended) An apparatus for conveying bidirectional data across a galvanic barrier comprising:

a signal generator;

a signal modulator ~~**capable of**~~ **for** modulating with outbound data a signal produced by the signal generator;

a transformer having a first side ~~**capable of**~~ **for** receiving a modulated signal from the signal modulator and a second side;

a data extractor ~~**capable of**~~ **for** extracting outbound data from a modulated signal received from the second side of the transformer, **the data extractor further comprising a comparator**;

a transformer load modulator ~~**capable of**~~ **for** modulating the load on the second side of the transformer according to inbound data; and

an inbound data recovery unit ~~**capable of**~~ **for** determining inbound data by sensing load modulations induced by the transformer load modulator.

9. (Currently amended) The apparatus of Claim 8 wherein the signal modulator comprises a phase modulator ~~**capable of**~~ **for** altering the phase of the signal coincident with a clock.

10. (Currently amended) The apparatus of Claim 8 wherein the data extractor comprises:

a clock extractor ~~**capable of**~~ **for** extracting a clock from a received modulated signal; and

a sampling device ~~**capable of**~~ **for** sampling the received modulated signal according to the extracted clock.

11. (Currently amended) The apparatus of Claim 10 wherein the clock extractor comprises:

a controllable oscillator ~~**capable of**~~ **for** generating a clock according to a control signal; and

the comparator ~~**capable of**~~ **is for** generating the control signal by comparing transitions in a received modulated signal with transitions in the generated clock.

12. (Currently amended) The apparatus of Claim 8 wherein the transformer load modulator comprises:

an impedance element;

a synchronizer ~~**capable of**~~ **for** synchronizing inbound data with an extracted clock signal; and

a switch ~~**capable of**~~ **for** attaching the impedance element to the second side of the transformer according to the synchronized inbound data.

13. (Currently amended) The apparatus of Claim 8 further comprising:

a digital-to-analog converter ~~**capable of**~~ **for** capable of generating an analog signal according to extracted outbound data;

a line circuit load ~~**capable of**~~ **for** presenting a load to a communications channel;

impedance element; and

an analog gate ~~**capable of**~~ **for** linearly imparting the impedance element across the line circuit load according to the analog signal.

14. (Currently amended) The apparatus of Claim 8 further comprising:

a line circuit load ~~**capable of**~~ **for** presenting a load to a communications channel;

an analog-to-digital converter ~~**capable of**~~ **for** generating a digital value according the voltage present across the line circuit load;

an impedance element; and

a switch ~~**capable of**~~ **for** attaching the impedance element to the second side of the transformer according to the digital value.

15. (Currently amended) A system-side isolation controller comprising:

a signal generator;

a signal modulator ~~**capable of**~~ **for** modulating a signal produced by the signal generator, **the signal modulator comprising an exclusive OR gate and an exclusive NOR gate**; and

an inbound data recovery unit ~~**capable of**~~ **for** determining inbound data by sensing load modulations exhibited by a transformer.

16. (Currently amended) The system-side isolation controller of Claim 15 further comprising a transformer driver ~~**capable of**~~ **for** driving the transformer with the modulated signal.

17. (Currently amended) A line-side isolation controller comprising:

a data extractor ~~**capable of**~~ **for** extracting outbound data from a modulated signal received from a second side of a transformer, **the data extractor comprising a comparator**; and

a transformer load modulator ~~**capable of**~~ **for** modulating the load presented to the second side of the transformer according to inbound data.

18. (Currently amended) The line-side isolation controller of Claim 17 wherein the data extractor comprises:

a clock extractor ~~**capable of**~~ **for** extracting a clock signal from a received modulated signal; and

a sampling device ~~**capable of**~~ **for** sampling the received modulated signal according to the extracted clock signal.

19. (Currently amended) The line-side isolation controller of Claim 18 wherein the clock extractor comprises:

a controllable oscillator ~~**capable of**~~ **for** generating a clock according to a control signal; and

the comparator ~~**capable of**~~ **is for** generating the control signal by comparing transitions in a received modulated signal with transitions in the generated clock.

20. (Currently amended) The line-side isolation controller of Claim 17 further comprising:

a digital-to-analog converter ~~**capable of**~~ **for** generating an analog signal according to extracted outbound data;

an analog gate ~~**capable of**~~ **for** linearly imparting a first impedance element across a line circuit load according to the analog signal;

an analog-to-digital converter ~~**capable of**~~ **for** generating a digital value according the voltage present across the line circuit load;

an impedance element; and

a switch ~~**capable of**~~ **for** attaching a second impedance element the second side of the transformer according to the digital value.